VIII. CLAIMS APPENDIX

1. (Previously Presented) A method of forming a coating on a plastics substrate comprising the steps of:

applying a metallic layer to the plastic substrate wherein the metallic layer is selected from the group of metals including at least magnesium, titanium, tantalum, zirconium, niobium, hafnium, tin, tungsten, molybdenum, vanadium, antimony, bismuth, and alloys of the aforementioned metals; and

subjecting the metallic layer to electrolytic plasma oxidation, wherein the metallic layer is anodically charged and immersed in an aqueous electrolytic solution for forming at least a sintered ceramic oxide layer on the metallic layer.

2. (Original) The method according to Claim 1 wherein the group of metals further includes aluminium.

3. (Original) The method according to Claim 1 wherein the metallic layer is deposited on the substrate.

4. (Original) The method according to Claim 3 wherein the metallic layer is sprayed on the substrate.

5. (Withdrawn) The method according to Claim 1 wherein the metallic layer is adhered to the substrate.

6. (Original) The method according to Claim 1 wherein the metallic layer comprises a thickness less than 100um.

7. (Original) The method according to Claim 1 wherein the substrate is roughened prior to applying the metallic layer thereto.

8. (Original) The method according to Claim 1 wherein the metallic layer is formed on a second metallic layer previously applied to the substrate.

9. (Withdrawn) The method according to Claim 1 wherein the metallic layer is formed on a polymeric layer previously applied to the substrate.

10. (Original) The method according to Claim 1 wherein the substrate comprises an epoxy-carbon fibre composite or fibre reinforced plastics material.

11. (Original) The method according to Claim 1 further including the step of smoothening the metallic layer prior to the step of subjecting the metallic layer to electrolytic plasma oxidation.

12. (Original) The method according to Claim 1 wherein the electrolytic plasma oxidation is performed at a pH from 7 to 8.5.

13. (Previously Presented) The method according to Claim 1 wherein the coating

comprising the metallic layer and the sintered ceramic oxide layer has a thickness less than 100um.

14. (Original) The method according to Claim 13 wherein the thickness is less than 50um.

15. (Withdrawn) The method according to Claim 1 further comprising the step of modifying a physical property of the coating after the step of subjecting the metallic layer to electrolytic plasma oxidation.

16. (Withdrawn) The method according to Claim 1 further comprising the step of at least partially removing an external layer from the metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

17. (Withdrawn) The method according to Claim 1 further comprising the step of abrasively removing at least part of the metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

18. (Withdrawn) The method according to Claim 1 further comprising the step of applying a material for reducing the porosity of the coating to the metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

19. (Withdrawn) The method according to Claim 1 further comprising the step of

applying a material for enhancing the corrosion resistance of the coating to the metallic layer after the step of subjecting the metallic layer to electrolytic plasma oxidation.

20. (Withdrawn) The method according to Claim 1 further comprising the step of applying a layer comprising at least one organic material selected from the group consisting of a fluorocarbon, polytetrafluoroethylene, Carbon, carbides of Ni, Cr, Mo and W, a paint and a resin after the step of subjecting the metallic layer subjected to electrolytic plasma oxidation.

21. (Withdrawn) The method of forming a coating on a metallic or plastics substrate comprising the steps of:

applying a first metallic layer to the substrate;

applying a second metallic layer on at least a portion of the first metallic layer; and

subjecting the second metallic layer to electrolytic plasma oxidation to form the coating.

22. (Withdrawn) The method according to Claim 21 wherein the substrate comprises a component of a vacuum pump.

23. (Withdrawn) A vacuum pump component comprising:

a metallic layer on the component and wherein the metallic layer is subjected to electrolytic plasma oxidation.

24. (Original) The method according to Claim 1 wherein the substrate is a component of a vacuum pump.

25. (Withdrawn) The method according to Claim 1 further comprising the step of treating an external surface of the coating to modify a chemical property of the coating.

26. (Original) The method according to Claim 1 further comprising the step of applying to the metallic layer subjected to electrolytic plasma oxidation a layer formed from at least one metal selected from the group consisting of Mo, Ni, Cr and W.

27. (Withdrawn) A method of forming a coating on a metallic or plastics substrate comprising the steps of:

applying a layer comprising nickel to substrate;

applying a layer comprising aluminum to the nickel layer; and

subjecting the aluminum layer to electrolytic plasma oxidation.

28. (Withdrawn) A vacuum pump component having a surface comprising:

a metallic layer on the surface wherein the metallic layer is selected from the group of metals consisting of aluminum, magnesium, titanium, tantalum, zirconium, neobydium, hafnium, tin, tungsten, molybdenum, vanadium, antimony, bismuth, and alloys of the aforementioned metals; and

wherein the metallic layer is subjected to electrolytic plasma oxidation.

29. (Withdrawn) A vacuum pump comprising:

a component; and

a metallic layer on the component wherein at least a portion of the metallic layer is oxidized by electrolytic plasma oxidation.

30. (Withdrawn) The vacuum pump of claim 29 wherein the component is selected from the group of vacuum pump components consisting of a composite tube, a regenerative section, a molecular section, a pipe, a housing, a rotor and a stator.

31. (Withdrawn) The vacuum pump of claim 29 wherein the component comprises a metal.

32. (Withdrawn) The vacuum pump of claim 29 wherein the component comprises a plastic.

33. (Withdrawn) The vacuum pump of claim 29 wherein the component comprises an epoxy-carbon fiber composite or fiber reinforced plastics material.

34. (Withdrawn) The vacuum pump of claim 29 wherein the metallic layer is selected from the group of metals consisting of aluminum, magnesium, titanium, tantalum, zirconium, neobydium, hafnium, tin, tungsten, molybdenum, vanadium, antimony,

bismuth, and alloys of the aforementioned metals and wherein the metallic layer is subjected to electrolytic plasma oxidation.

35. (Withdrawn) The vacuum pump of claim 29 wherein the at least a portion of the metallic layer oxidized by electrolytic plasma oxidation comprises a ceramic.

36. (Withdrawn) The vacuum pump of claim 35 wherein the ceramic comprises a transitional layer.

37. (Withdrawn) The vacuum pump of claim 36 wherein the ceramic further comprises a functional layer comprising a sintered ceramic oxide having a hard crystalline.

38. (Withdrawn) The vacuum pump of claim 37 wherein the ceramic further comprises a surface layer having a lower hardness value and a higher porosity value than the hardness and porosity values of the functional layer.

39. (Withdrawn) A vacuum pump component having a ceramic coating comprising:

a metallic layer having an outer surface;

wherein the metallic layer comprises:

a surface layer extending inwardly from the outer surface of the metallic layer;

a functional layer extending inwardly from the outer surface of the metallic layer;

a transitional layer extending inwardly from the functional layer; and

an unreacted metallic layer extending inwardly from the transitional layer.

40. (Withdrawn) The vacuum pump component of claim 39 wherein at least one of the surface layer, the functional layer and the transitional layer is formed by exposing at least a portion of the metallic layer to electrolytic plasma oxidation.

41. (Withdrawn) The vacuum pump of claim 39 wherein the transitional layer is an adhesive for the ceramic coating.

42. (Withdrawn) The vacuum pump of claim 39 wherein the functional layer comprises a sintered ceramic oxide having a hard crystallite.

43. (Withdrawn) The vacuum pump of claim 39 wherein the surface layer has a lower hardness value and a higher porosity value than the hardness and porosity value of the functional layer.

IX. EVIDENCE APPENDIX

Following references are relied upon by the Examiner in rejecting the claims of the present application, and cited in this Appeal Brief. Copies of the references are separately attached to this Appeal Brief.

1. US Patent Application Publication No. 2004/0247904 to Chan is relied on by Examiner in the Final Office Action of April 14, 2010.
2. US Patent No. 5,811,194 to Kurze et al. is relied on by Examiner in the Final Office Action of April 14, 2010.
3. US Patent No. 6,029,571 to Johner et al. is relied on by Examiner in the Final Office Action of April 14, 2010.
4. JP Patent Application Publication No. 54-31479 is relied on by Examiner in the Final Office Action of April 14, 2010.
5. Wu, M. T., Leu, I.C., and Hon, M. H., 2002, Effect of polishing pretreatment on the fabrication of ordered nanopore arrays on aluminum foils by anodization, J. Vac. Sci. Technol., Vol. B 20(3), pp. 776-782, is relied on by Examiner in the Final Office Action of April 14, 2010.
6. International Patent Application Publication No. WO 02/25113 to Hasert et al. is relied on by Examiner in the Final Office Action of April 14, 2010.
7. US Patent No. 6,655,937 to Hasert et al. is relied on by Examiner in the Final Office Action of April 14, 2010.
8. US Patent No. 4,647,347 to Schoener et al. is relied on by Examiner in the Final Office Action of April 14, 2010.

X. RELATED PROCEEDINGS APPENDIX

None